



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/889,378 | 07/16/2001 | Morio Yoshimoto | 1163-0346P | 2948 |

2292 7590 07/27/2004

BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH, VA 22040-0747

EXAMINER

HOOSAIN, ALLAN

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

2645

14

DATE MAILED: 07/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/889,378

Applicant(s)

YOSHIMOTO ET AL.

Examiner

Allan Hoosain

Art Unit

2645

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 May 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 13.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Art Unit: 2645

FINAL DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-5, 7-13 and 17-20 are rejected under 35 U.S.C. 102(e) as being anticipated by **Shaffer '490** (US 5,995,490).

As to Claim 1, with respect to Figures 1-2, **Shaffer '490** teaches a data communication device comprising:

a line state monitoring unit, 40, for detecting a line state relating to transmission quality in each of a plurality of communication lines and producing line state information indicating the line state of each communication line (Figure 1, label 36 and Col. 6, lines 1-10); and

a transmission control unit, 36, including a plurality of operation modes for transmitting data over each communication line, wherein the transmission unit is configured to:

independently select, for each of the communication lines, a specific operation mode from the operation modes based on an error tolerance level, which is determined according to the line state information for the communication line produced by the line state monitoring unit, and

Art Unit: 2645

perform transmission control for continuously transmitting data over the plurality of communication lines regardless of the line states detected by the line state monitoring unit according to the specific operation mode (Col. 4, lines 24-37).

As to Claim 2, **Shaffer '490** teaches a data communication device according to claim 1, wherein the specific operation mode is changed to another operation mode for one of the communication lines by the transmission control unit in response to a change of the line state indicated by the line state information during the transmission of the data without suspending the transmission of the data, and the transmission control is performed for the transmission data according to the changed operation mode by the transmission control unit (Figure 2, label 58,66).

As to Claim 3, **Shaffer '490** teaches a data communication device according to claim 1, wherein:
the transmission control unit has a plurality of data multiplexing methods corresponding to the operation modes,

a specific multiplexing method is selected from the multiplexing methods by the transmission control unit according to the line state information produced by the line state monitoring unit for a corresponding one of the communication lines, the specific multiplexing method being an optimal one of the plurality of multiplexing methods for transmitting data according to the determined error tolerance level, and

pieces of transmission data, which are planned to be sent out to the corresponding communication line, are multiplexed with each other to a stream of multiplexed transmission

Art Unit: 2645

data according to the specific multiplexing method (Col. 4, line 58 through Col. 5, line 3 and Col. 6, lines 30-40).

As to Claim 4, **Shaffer '490** teaches a data communication device according to claim 1, wherein the specific operation mode is changed to another operation mode corresponding to a high error tolerance level by the transmission control unit according to the line state information in cases where the line state information indicates a deteriorated line state, and the specific operation mode is changed to another operation mode corresponding to a low error tolerance level by the transmission control unit according to the line state information in cases where the line state information indicates an ameliorated line state (Col. 6, lines 30-45 and 56-65).

As to Claim 5, **Shaffer '490** teaches a data communication device according to claim 1, further comprising:

an operation mode change request receiving unit for receiving an operation mode change request from a second data communication device and sending the operation mode change request to the transmission control unit to make the transmission control unit perform the transmission control for the transmission data according to a particular operation mode indicated by the operation mode change request (Col. 6, lines 55-45 and 56-65).

As to Claim 7, **Shaffer '490** teaches a data communication device according to claim 1, further comprising:

Art Unit: 2645

a line interface for receiving and sending the transmission data to/from the communication lines,

wherein the transmission control unit controls the line interface to increase a data transfer rate for data sending while decreasing a data transfer rate for data reception by a degree of the increase of the data transfer rate for data sending in cases where the specific operation mode is changed to a particular operation mode corresponding to a high error tolerance level in the transmission control unit to perform the transmission control for the transmission data sent out to a corresponding one of the communication lines according to the particular operation mode (Col. 6, lines 55-65).

As to Claim 8, **Shaffer '490** teaches a data communication device according to claim 1, further comprising:

a line interface for receiving the transmission data from, and sending the transmission data to, the communication lines,

wherein the transmission control unit controls the line interface to decrease a data transfer rate for data sending while increasing a data transfer rate for data reception by a degree of the decrease of the data transfer rate for data sending in cases where the specific operation mode is changed to a particular operation mode corresponding to a low error tolerance level in the transmission control unit to perform the transmission control for the transmission data sent out to a corresponding one of the communication lines according to the particular operation mode (Col. 6, lines 55-65).

Art Unit: 2645

As to Claim 9, with respect to Figures 1-2, **Shaffer '490** teaches a data communication device comprising:

a line state monitoring unit for detecting a line state relating to transmission quality in each of a plurality of communication lines and producing line state information indicating the line state of each communication line (Figure 1);

a transmission control unit including a plurality of operation modes for transmitting data over each communication line, wherein the transmission control unit is configured to:

independently select, for each of the communication lines, a specific operation mode from the operation modes based on an error tolerance level, which is determined according to the line state information for the communication line produced by the line state monitoring unit, and

perform a transmission control for continuously transmitting data over the plurality of communication lines regardless of the line states detected by line state monitoring unit according to the specific operation mode, wherein the data is sent out to the communication lines or received through the communication lines (Col. 4, line 58 through Col. 5, line 3); and

an operation mode change request outputting unit for requesting of a second data communication device, with which communication is performed through the communication lines, that an operation mode selected in the second data communication device is changed to the specific operation mode selected by the transmission control unit (Col. 6, lines 30-45).

Art Unit: 2645

As to Claim 10, **Shaffer '490** teaches a data communication device according to claim 9, wherein the request of the operation mode change request outputting unit to the second data communication device is performed during the sending or reception of the transmission data without suspending the sending or reception of the transmission data (Col. 6, lines 30-45 and Col. 5, lines 30-42).

As to Claim 11, **Shaffer '490** teaches a data communication device according to claim 9, wherein:

the transmission control unit has a plurality of data multiplexing methods corresponding to the operation modes,

a specific multiplexing method is selected from the multiplexing methods by the transmission control unit according to the line state information produced by the line state monitoring unit, the selected multiplexing method being an optimal one of the plurality of data multiplexing methods for transmitting data according to the determined error tolerance level, and

the operation mode change request outputting unit requests the second data communication device, during the transmission of the data without suspending the transmission of the data, to select the specific multiplexing method (Col. 4, lines 1-10 and Col. 5, lines 16-34).

As to Claim 12, **Shaffer '490** teaches a data communication device according to claim 9, wherein the operation mode change request outputting unit requests the second data communication device to change the specific operation mode to an operation mode corresponding to a high error tolerance level in cases where the line state information produced

Art Unit: 2645

by the line state monitoring unit indicates a deteriorated line state, and the operation mode change request outputting unit requests the second data communication device to change the specific operation mode to an operation mode corresponding to a low error tolerance level in cases where the line state information produced by the line state monitoring unit indicates an ameliorated line state (Col. 6, lines 30-45).

As to Claim 13, **Shaffer '490** teaches a data communication device according to claim 9, further comprising:

an operation mode change request receiving unit for receiving an operation mode change request from the second data communication device, and sending the operation mode change request to the transmission control unit to make the transmission control unit perform the transmission control for at least a portion of the transmission data, which is received through at least one of the communication lines or is sent out to at least one of the communication lines, according to a particular operation mode indicated by the operation mode change request (Col. 6, lines 30-45).

As to Claim 17, **Shaffer '490** teaches a data communication device according to claim 9, further comprising:

a line interface for receiving and sending the transmission data from/to the communication lines, wherein the transmission control unit controls the line interface to increase a data transfer rate for data sending while decreasing a data transfer rate for data reception by a degree of the increase of the data transfer rate for data sending, in cases where the specific

Art Unit: 2645

operation mode is changed to a particular operation mode corresponding to a high error tolerance level in the transmission control unit to perform the transmission control for the transmission data sent out to a corresponding one of the communication lines according to the particular operation mode, and to increase a data transfer rate for data reception while decreasing a data transfer rate for data sending by a degree of the increase of the data transfer rate for data reception in cases where the specific operation mode is changed to a particular operation mode corresponding to a high error tolerance level in the transmission control unit to perform the transmission control for the transmission data received through a corresponding one of the communication lines according to the particular operation mode (Col. 6, lines 56-65 and Col. 7, lines 1-16).

As to Claim 18, **Shaffer '490** teaches a data communication device according to claim 9, further comprising:

a line interface for receiving and sending the transmission data from/to the communication lines, wherein the transmission control unit controls the line interface to decrease a data transfer rate for data sending while increasing a data transfer rate for data reception by a degree of the decrease of the data transfer rate for data sending, in cases where the specific operation mode is changed to a particular operation mode corresponding to a low error tolerance level in the transmission control unit to perform the transmission control for the transmission data sent out to a corresponding one of the communication lines according to the particular operation mode, and to decrease a data transfer rate for data reception while increasing a data transfer rate for data sending by a degree of the decrease of the data transfer rate for data

Art Unit: 2645

reception in cases where the specific operation mode is changed to a particular operation mode corresponding to a low error tolerance level in the transmission control unit to perform the transmission control for the transmission data received through a corresponding one of the communication lines according to the particular operation mode (Col. 6, lines 56-65 and Col. 7, lines 1-16).

As to Claim 19, **Shaffer '490** teaches a data communication device according to claim 13, further comprising:

a line interface for receiving transmission data from, and sending the transmission data to the communication lines (Figure 1),

wherein the operation mode change request receiving unit further receives a data rate change request from the second data communication device, the operation mode change request receiving unit sends the data rate change request to the transmission control unit, the transmission control unit controls the line interface to increase a data transfer rate for data sending while decreasing a data transfer rate for data reception by a degree of the increase of the data transfer rate for data sending according to the data rate change request, in cases where the specific operation mode is changed to a particular operation mode corresponding to a high error tolerance level in the transmission control unit according to the operation mode change request to perform the transmission control for the transmission data sent out to a corresponding one of the communication lines according to the particular operation mode, and the transmission control unit controls the line interface to increase a data transfer rate for data reception while decreasing a data transfer rate for data sending by a degree of the increase of the data transfer rate for data

Art Unit: 2645

reception according to the data rate change request in cases where the specific operation mode is changed to a particular operation mode corresponding to a high error tolerance level in the transmission control unit according to the operation mode change request to perform the transmission control for the transmission data received through a corresponding one of the communication line according to the particular operation mode (Col. 6, lines 30-45, 56-65 and Col. 7, lines 1-16).

As to Claim 20, **Shaffer '490** teaches a data communication device according to claim 9, wherein the operation mode change request outputting unit requests the second data communication device to increase a data transfer rate for data sending while decreasing a data transfer rate for data reception by a degree of the increase of the data transfer rate for data sending, in cases where the operation mode change request outputting unit requests the second data communication device to change the specific operation mode to a particular operation mode corresponding to a high error tolerance level in the transmission control unit according to the operation mode change request to perform the transmission control for the transmission data sent out to a corresponding one of the communication lines according to the particular operation mode, and the operation mode change request outputting unit requests the second data communication device to increase a data transfer rate for data reception while decreasing a data transfer rate for data sending by a degree of the increase of the data transfer rate for data reception in cases where the operation mode change request outputting unit requests the second data communication device to change the specific operation mode to a particular operation mode corresponding to a high error tolerance level in the transmission control unit according to the

Art Unit: 2645

operation mode change request to perform the transmission control for the transmission data received through a corresponding one of the communication line according to the particular operation mode (Col. 6, lines 30-45, 56-65 and Col. 7, lines 1-16).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 6, 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Shaffer '490** in view of **Shaffer '668** (US 5,898,668).

As to Claims 6,14-16, **Shaffer** teaches a data communication device according to claim 1, further comprising:

Art Unit: 2645

a line state monitoring unit, 40, for detecting a line state relating to transmission quality in each of a plurality of communication lines and producing line state information indicating the line state of each communication line (Figure 1, label 36 and Col. 6, lines 1-10); and

a transmission control unit, 36, including a plurality of operation modes for transmitting data over each communication line, the transmission unit is configured to:

independently select, for each of the communication lines, a specific operation mode from the operation modes according to the line state information for the communication line produced by the line state monitoring unit, and

perform transmission control for continuously transmitting data over the plurality of communication lines regardless of the line states detected by the line state monitoring unit according to the specific operation mode (Col. 4, lines 24-37); and

a line interface, connected with the communication lines, for sending the transmission data to the communication lines (Figure 1, label 30),

wherein the transmission control unit controls the line interface connected with the line interface, in cases where the specific operation mode corresponds to a high error tolerance level, and in cases where the specific operation mode is changed to a low error tolerance level;

Shaffer '490 does not teach the following limitation:

“add a new communication line” and “disconnect the new communication line”

However, it is obvious that **Shaffer '490** can be modified to accommodate the limitation. This is because **Shaffer '490** teaches connection to PSTN using one or more links (Figure 1 and Col. 3, lines 22-26). **Shaffer '668** teaches switch mode to different lines to enable QOS service levels (Figures 3-4 and Col. 8, lines 41-64). Having the cited art at the time the invention was

Art Unit: 2645

made, it would have been obvious to one of ordinary skill in the art to add switch mode capability to **Shaffer '490** invention for interconnection to communication lines as taught by **Shaffer '668** invention in order to provide QOS requirements.

Response to Arguments

6. Applicant's arguments filed in the 6/22/04 Remarks have been fully considered but they are not persuasive because of the following:

(a) The arguments with respect to Claims 1 and 9 are all directed towards "Intended Use" as recited in the limitations beginning with "for", e.g.:

(i) "for detecting a line state relating to transmission quality in each of a plurality of communication lines and producing line state information indicating line state of each communication line"

(ii) "independently select, for each of the communication line"

Shaffer '490 has the capability of using plural lines and, therefore, can achieve the limitations. In particular, **Shaffer '490** at Col. 4, lines 51-55 inherently teaches that more than one transmission lines can be used.

The arguments with respect to the 35 USC 103 rejections are not persuasive for the reasons given above and before in the 8/25/03 Office Action.

(b) Examiner respectfully invites Applicants to contact Examiner to discuss possible amendments for overcoming the prior art of record.

Art Unit: 2645

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

None

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

9. Any response to this final action should be mailed to:

Box AF

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

(703) 872-9314, (for formal communications; please mark "EXPEDITED
PROCEDURE")

Or:

(703) 306-0377 (for customer service assistance)


Art Unit: 2645

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington. VA., Sixth Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Allan Hoosain** whose telephone number is (703) 305-4012. The examiner can normally be reached on Monday to Friday from 7 am to 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Fan Tsang**, can be reached on (703) 305-4895.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-3900.


Allan Hoosain
Primary Examiner
7/23/04